SOLUTIA Solutions for a better life.

US EPA RECORDS CENTER REGION 5
512700

June 4, 2014

Ms. Stephanie Linebaugh
U.S. EPA – Region 5
77 West Jackson Blvd (SR-6J)
Chicago, Illinois 60604-3590

RE: Sauget Area 2 Site – October 3, 2002 Unilateral Administrative Order
Groundwater Operable Unit

Dear Stephanie:

Attached, is the March 2014 Quarterly Groundwater Monitoring Event Report for the GMCS.

Any questions, please advise.

Sincerely,

Steven D. Smith
Project Coordinator

cc: Lisa Cundiff – CH2M Hill
Paul Lake – Illinois EPA (2 copies)
Bill Johnson – Solutia

Golder Associates

May 27, 2014 Project No.: 063-9678

Mr. Bill Johnson – 2N
Solutia Inc.
575 Maryville Centre Drive
St. Louis, MO 63141

RE: **MARCH 2014 QUARTERLY GROUNDWATER MONITORING EVENT**
SAUGET AREA 2 – SITE R, SAUGET, ILLINOIS

Dear Mr. Johnson:

Golder Associates Inc. (Golder) is pleased to submit this letter report to Solutia Inc. (Solutia) summarizing the March 2014 Quarterly Groundwater Monitoring Event at Sauget Area 2 – Site R (Site). At the request of Solutia, Golder conducted the quarterly sampling event at the Site from March 10, 2014 through March 13, 2014. The work included the collection of groundwater samples from 11 of the 12 monitoring wells in accordance with the Field Sampling Plan (FSP; URS, 2003). This letter summarizes the work performed during the quarterly event and includes Detection Summary Tables (Appendix A) and the Data Validation Report (Appendix B). The Lenexa, Kansas location of Pace Analytical Services, Inc. (Pace Analytical) performed analytical testing of the groundwater samples. Laboratory reports are not included in this letter report. Laboratory reports were forwarded directly from Pace Analytical to Solutia.

GROUNDWATER SAMPLING

Groundwater samples were collected from four monitoring well clusters. Each well cluster consists of three two-inch diameter wells, with one well screened in the Shallow Hydrogeologic Unit, one well screened in the Middle Hydrogeologic Unit, and one well screened in the Deep Hydrogeologic Unit. Groundwater was purged and sampled from 11 of the 12 wells with a centrifugal positive pressure pump and dedicated polyethylene tubing. A groundwater sample was not collected for well BWMW-4S because the well was dry, therefore sufficient water was not available for sample collection. Field measurements of pH, specific conductivity, turbidity, and temperature were recorded for all groundwater samples. Purging continued until the turbidity reached or fell below five nephelometric turbidity units (NTUs), or stabilization of field parameters was achieved for one hour, whichever occurred first. Prior to the purging and sampling of the monitoring wells, a synoptic round of water level measurements of the 12 wells was completed.

Groundwater samples were collected directly into laboratory-provided, pre-preserved sample bottles and packed on-Site following chain-of-custody protocol. The following laboratory tests were requested for the groundwater samples and associated quality assurance/quality control (QA/QC) samples:

- Volatile Organic Compounds (United States Environmental Protection Agency - USEPA Method 8260B)
- Semi-Volatile Organic Compounds (USEPA Method 8270C)
- Organochlorine Pesticides (USEPA Method 8081A)
- Chlorinated Herbicides (USEPA Method 8151A)
- Metals (USEPA Method 6010B/7470A)
- Total Organic Carbon (SW846 Method 9060/SM 5310C)

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- Total Dissolved Solids (USEPA Method 160.1/SM 2540C)

After collection, the groundwater samples were delivered to the Pace Analytical Service Center in Florissant, Missouri. The samples to be analyzed for volatile organic compounds, semi-volatile organic compounds, metals, total organic compounds, total dissolved solids, and general chemistry parameters were transported to the Lenexa, Kansas laboratory via courier. The samples to be analyzed for chlorinated herbicides were shipped for next day delivery to the TestAmerica Savannah, Georgia facility by the Pace Analytical Service Center in Florissant, Missouri.

Groundwater samples were designated by the well number. QA/QC samples consisted of two field duplicates (DUP-1 and DUP-2) collected at BWMW-4M and BWMW-1D, respectively, a matrix spike and matrix spike duplicate (MS/MSD) collected at BWMW-2M, two rinsate blanks (RB-1 and RB-2) collected following the collection of samples at BWMW-2S and BWMW-1D, two field blanks (FB-1 and FB-2), and two trip blanks. Level III data validation was performed on all the analytical data packages, and Level IV data validation was performed on ten percent of the analytical data packages. Some analytical data were qualified; however, no data were rejected.

Sampling equipment was decontaminated prior to mobilizing to the Site, between sample locations, and prior to demobilizing from the Site. Non-dedicated sampling equipment was decontaminated between samples with non-phosphatic detergent solution and a potable water sprayer. Purged groundwater and decontamination water were containerized in an on-Site vertical storage poly-tank.

Work was performed in general accordance with the January 31, 2003 Sauget Area 2 Groundwater Migration Control System FSP and Quality Assurance Project Plan.

Please contact us if you have any questions about the work or require additional information.

Sincerely,

GOLDER ASSOCIATES INC.

Amanda W. Derhake, Ph.D., P.E.
Project Environmental Engineer

Mark N. Haddock, R.G., P.E.
Associate, Senior Geological Engineer

Attachments
Appendix A – Detection Summary Tables
Appendix B – Data Validation Report

APPENDIX A

DETECTION SUMMARY TABLES

Table 1
Summary of Validated Groundwater Sample Data - Organics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Solutia Inc. - Sauget, Illinois

Monitoring Well		BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID		60164660017		60164660016		60164660015		60164660014		60164660013		60164660012	
Date Sampled		3/13/2014		3/13/2014		3/13/2014		3/12/2014		3/12/2014		3/12/2014	
Time Sampled		12 05		10 05		11 52		14 21		10 00		10 25	
Volatile Organic Compounds (USEPA Method 8260B)													
Date Prepared													
Date Analyzed		3/26/2014		3/26/2014		3/26/2014		3/21/2014		3/21/2014		3/21/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1-Dichloroethene	75-35-4	200 U	200	10 0 U	10 0	10 0 U	10 0	0 40 U	0 40	5 0 U	5 0	10 0 U	10 0
1,2-Dichloroethane	107-06-2	120 U	120	6 0 U	6 0	6 0 U	6.0	0 24 U	0 24	3 0 U	3 0	6 0 U	6 0
2-Butanone	78-93-3	590 U	590	29 5 U	29 5	29 5 U	29 5	***7.0 J***	1 2	***117 J***	14 8	***383 J***	29 5
Acetone	67-64-1	***2,020 J***	1880	***106 J***	94 0	***107 J***	94 0	3 8 U	3 8	47 0 U	47 0	94 0 U	94 0
Benzene	71-43-2	***8,100***	60 0	***465***	3 0	***47.1 J***	3 0	***0.61 J***	0 12	***164***	1 5	***747***	3 0
Chlorobenzene	108-90-7	***166,000***	210	***1,960***	10 5	***5,190***	10 5	***153***	0 42	***2,230***	5 2	***3,920***	10 5
Chloromethane	74-87-3	80 0 U	80 0	4 0 U	4 0	4 0 U	4 0	0 16 U	0 16	2 0 U	2 0	4 0 U	4 0
cis-1,2-Dichloroethene	156-59-2	80 0 U	80 0	4 0 U	4 0	4 0 U	4 0	0 16 U	0 16	2 0 U	2 0	4 0 U	4 0
Ethylbenzene	100-41-4	180 U	180	9 0 U	9 0	9 0 U	9 0	0 36 U	0 36	***6.0 J***	4 5	***56.0***	9 0
Toluene	108-88-3	170 U	170	8 5 U	8 5	8 5 U	8 5	0 34 U	0 34	4 2 U	4 2	***21 J***	8 5
Trichloroethene	79-01-6	***249 J***	170	8 5 U	8 5	***11.8 J***	8 5	0 34 U	0 34	4 2 U	4 2	8 5 U	8 5
Vinyl chloride	75-01-4	130 U	130	6 5 U	6 5	6 5 U	6 5	0 26 U	0 26	3 2 U	3 2	6 5 U	6 5
Xylenes, Total	1330-20-7	420 U	420	21 0 U	21 0	21 0 U	21 0	0 84 U	0 84	10 5 U	10 5	***151***	21 0
Semi-Volatile Organic Compounds (USEPA Method 8270C)													
Date Prepared		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Date Analyzed		3/28/2014		3/28/2014		3/27/2014		3/27/2014		3/27/2014		3/28/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,2-Dichlorobenzene	95-50-1	***2.9 J***	0 55	0 55 U	0 55	***2.2 J***	0 55	***2.3 J***	0 55	***4.1 J***	0 55	***52.9 J***	27 5
1,3-Dichlorobenzene	541-73-1	0 94 U	0 94	***1.5 J***	0 94	0 94 U	0 94	0 94 U	0 94	***4.3 J***	0 94	47 0 U	47 0
1,4-Dichlorobenzene	106-46-7	***6.8 J***	0 69	***5.1 J***	0 69	***7.0 J***	0.69	***1.5 J***	0 69	***37.9***	0 69	***259 J***	34 5
2,4-Dimethylphenol	105-67-9	1 1 U	1 1	1 1 U	1 1	1 1 U	1 1	1 1 U	1 1	1 1 U	1 1	***91.3 J***	53 0
2-Chlorophenol	95-57-8	***98.7***	0 93	***1.6 J***	0 93	***2.9 J***	0 93	0 93 U	0 93	***3.0 J***	0 93	46 5 U	46 5
2-Methylnaphthalene	91-57-6	***1.0 J***	0 50	0 50 U	0 50	0 50 U	0 50	0 50 U	0 50	0 50 U	0 50	25 0 U	25 0
2-Methylphenol	95-48-7	***1.3 J***	0 88	0 88 U	0 88	0 88 U	0 88	0 88 U	0 88	0 88 U	0 88	44 0 U	44 0
3 & 4 Methylphenol	15831-10-4	***3.1 J***	0 78	0 78 U	0 78	0 78 U	0 78	0 78 U	0 78	0 78 U	0 78	39 0 U	39 0
3,3'-Dichlorobenzidine	91-94-1	2 0 U	2 0	2 0 U	2 0	2 0 U	2 0	2 0 U	2.0	2 0 U	2.0	102 U	102
4-Chloroaniline	106-47-8	***50.8***	0 56	***176 D***	2 8	***3.3 J***	0 56	***25.0***	0 56	***3,750 D***	28 0	***27,000 JD***	280
Phenol	108-95-2	***16.9***	0 51	0 51 U	0 51	0 51 U	0 51	0 51 U	0 51	0 51 U	0 51	25 5 U	25 5

Parameters not listed were not detected in any samples
Results in bold italics denote detections
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value
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JD - Compound analyzed at a dilution, result is an estimated value

Prepared by LAB Date 04/17/2014
Checked by JSI Date 05/12/2014
Reviewed by AWD Date 05/21/2014

Table 1
Summary of Validated Groundwater Sample Data - Organics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Soluta Inc. - Sauget, Illinois

Monitoring Well		BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID		60164660017		60164660016		60164660015		60164660014		60164660013		60164660012	
Date Sampled		3/13/2014		3/13/2014		3/13/2014		3/12/2014		3/12/2014		3/12/2014	
Time Sampled		12 05		10 05		11 52		14 21		10 00		10 25	
Organochlorine Pesticides (USEPA Method 8081A)													
Date Prepared		3/18/2014		3/18/2014		3/18/2014		3/18/2014		3/18/2014		3/18/2014	
Date Analyzed		3/25/2014		3/25/2014		3/25/2014		3/25/2014		3/25/2014		3/25/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
4,4'-DDE	72-55-9	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050
4,4'-DDT	50-29-3	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	***0.061 JP***	0.050
delta-BHC	319-86-8	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025
Dieldrin	60-57-1	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	***0.52***	0 050
Endosulfan I	959-98-8	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	***0.052***	0 025
Endosulfan sulfate	1031-07-8	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	***0.081 JP***	0 050
gamma-Chlordane	5103-74-2	0 029 U	0 029	0 029 U	0 029	0 029 U	0 029	0 029 U	0 029	0 029 U	0 029	***0.029 JP***	0 029
Heptachlor epoxide	1024-57-3	0 025 U	0 025	***0.045 JP***	0 025	0 025 U	0 025	0 025 U	0 025	***0.058 JP***	0 025	***0.12 JP***	0 025
Chlorinated Herbicides (USEPA Method 8151A)													
Date Prepared		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Date Analyzed		3/22/2014		3/22/2014		3/22/2014		3/22/2014		3/22/2014		3/22/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Dichlorprop	120-36-5	***4.0***	0 57	0 16 U	0 16	0 17 U	0 17	***0.19 J***	0 17	0 66 U	0 66	0 62 U	0 62
Total Organic Carbon (USEPA Method 9060/SM 5310C)													
Date Analyzed		4/2/2014		4/2/2014		3/19/2014		3/19/2014		4/2/2014		4/3/2014	
Analyte	CAS No.	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Organic Carbon (TOC)	7440-44-0	***22.3***	2 5	***4.3***	0 50	***4.7***	0 50	***19.6***	2 5	***15.6***	5 0	***132***	5 0

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Prepared by LAB Date 04/17/2014
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Lab Sample ID		60164660007		60164660006		60164660005		NS		60164660003		60164660004	
Date Sampled		3/11/2014		3/11/2014		3/11/2014		NS		3/10/2014		3/10/2014	
Time Sampled		11 56		10 20		12 30		NS		13 20		14 10	
Volatile Organic Compounds (USEPA Method 8260B)													
Date Prepared													
Date Analyzed		3/20/2014		3/20/2014		3/20/2014		NS		3/22/2014		3/20/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1-Dichloroethane	75-35-4	1 0 U	1 0	10 0 U	10 0	5 0 U	5 0	NS		0 20 U	0 20	***5.6 J***	2 0
1,2-Dichloroethane	107-06-2	0 60 U	0 60	6 0 U	6 0	3 0 U	3 0	NS		***0.45 J***	0 12	1 2 U	1 2
2-Butanone	78-93-3	3 0 U	3 0	29 5 U	29 5	14 8 U	14 8	NS		0 59 U	0 59	5 9 U	5 9
Acetone	67-64-1	9 4 U	9 4	94 0 U	94 0	47 0 U	47 0	NS		1 9 U	1 9	18 8 U	18 8
Benzene	71-43-2	***16.6***	0 30	***372***	3 0	***205***	1 5	NS		***0.78 J***	0 060	***38.9***	0 60
Chlorobenzene	108-90-7	***168***	1.0	***4,630***	10 5	***3,100***	5 2	NS		***133***	0 21	***1,600***	2 1
Chloromethane	74-87-3	***5.6***	0 40	***12.9 J***	4 0	2 0 U	2 0	NS		0 080 U	0 080	0 80 U	0 80
cis-1,2-Dichloroethene	156-59-2	0 40 U	0 40	4 0 U	4 0	2 0 U	2 0	NS		***1.1***	0 080	0 80 U	0 80
Ethylbenzene	100-41-4	0 90 U	0 90	9 0 U	9 0	***6.4 J***	4 5	NS		0 18 U	0 18	1 8 U	1 8
Toluene	108-88-3	0 85 U	0 85	8 5 U	8 5	4 2 U	4 2	NS		***0.82 J***	0 17	1 7 U	1 7
Trichloroethene	79-01-6	0 85 U	0 85	8 5 U	8 5	4 2 U	4 2	NS		0 17 U	0 17	1 7 U	1 7
Vinyl chloride	75-01-4	0 65 U	0 65	6 5 U	6 5	3 2 U	3 2	NS		***0.17 J***	0 13	1 3 U	1 3
Xylenes, Total	1330-20-7	2 1 U	2 1	21 0 U	21 0	10 5 U	10 5	NS		0 42 U	0 42	4 2 U	4 2
Semi-Volatile Organic Compounds (USEPA Method 8270C)													
Date Prepared		3/17/2014		3/17/2014		3/17/2014		NS		3/17/2014		3/17/2014	
Date Analyzed		3/26/2014		3/26/2014		3/26/2014		NS		3/26/2014		3/26/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,2-Dichlorobenzene	95-50-1	***1.7 J***	0 55	***1.1 J***	0 55	***44.7***	0 55	NS		***3.6 J***	0 55	***157 D***	5 5
1,3-Dichlorobenzene	541-73-1	0 94 U	0 94	***4.8 J***	0 94	***3.9 J***	0 94	NS		***1.7 J***	0 94	***18.2***	0 94
1,4-Dichlorobenzene	106-46-7	***4.7 J***	0 69	***9.9 J***	0 69	***85.9***	0 69	NS		***10.7***	0 69	***75.0***	0 69
2,4-Dimethylphenol	105-67-9	1 1 U	1 1	1 1 U	1 1	1 1 U	1 1	NS		1 1 U	1 1	1 1 U	1 1
2-Chlorophenol	95-57-8	0 93 U	0 93	0 93 U	0 93	0 93 U	0 93	NS		0 93 U	0 93	0 93 U	0 93
2-Methylnaphthalene	91-57-6	0 50 U	0 50	0 50 U	0 50	0 50 U	0 50	NS		0 50 U	0.50	0 50 U	0 50
2-Methylphenol	95-48-7	0 88 U	0 88	0 88 U	0 88	0 88 U	0 88	NS		0 88 U	0 88	0 88 U	0 88
3 & 4 Methylphenol	15831-10-4	0 78 U	0 78	0 78 U	0 78	0 78 U	0 78	NS		0 78 U	0 78	0 78 U	0 78
3,3'-Dichlorobenzidine	91-94-1	2 0 U	2 0	2 0 U	2 0	2 U	2 0	NS		2 0 U	2 0	2 0 U	2 0
4-Chloroaniline	106-47-8	***10.9 J***	0 56	***5,880 D***	56 0	***10,800 D***	112	NS		***30.0***	0 56	***1,990 JD***	56 0
Phenol	108-95-2	0 51 U	0 51	0 51 U	0 51	0 51 U	0 51	NS		0 51 U	0 51	0 51 U	0 51

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Prepared by: LAB Date: 04/17/2014
Checked by: JSI Date: 05/12/2014
Reviewed by: AWD Date: 05/21/2014

Table 1
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Site R Quarterly Groundwater Monitoring
Solutia Inc. - Sauget, Illinois

Monitoring Well		BWMW-3S	MDL	BWMW-3M	MDL	BWMW-3D	MDL	BWMW-4S	MDL	BWMW-4M	MDL	BWMW-4D	MDL
Lab Sample ID		60164660007		60164660006		60164660005		NS		60164660003		60164660004	
Date Sampled		3/11/2014		3/11/2014		3/11/2014		NS		3/10/2014		3/10/2014	
Time Sampled		11 56		10 20		12 30		NS		13 20		14 10	
Organochlorine Pesticides (USEPA Method 8081A)													
Date Prepared		3/14/2014		3/14/2014		3/14/2014		NS		3/14/2014		3/14/2014	
Date Analyzed		4/1/2014		4/1/2014		4/1/2014		NS		4/1/2014		4/1/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
4,4'-DDE	72-55-9	0 050 U	0 050	0 050 U	0 050	***0.59*** ***J***	0 50	NS		***0.060*** ***J***	0 050	***0.10***	0 050
4,4'-DDT	50-29-3	0 050 U	0 050	***0.091*** ***J***	0 050	0 50 U	0 50	NS		0 050 U	0 050	0 050 U	0 050
delta-BHC	319-86-8	0 025 U	0 025	0 025 U	0 025	0 25 U	0 25	NS		0 025 U	0 025	***0.047*** ***J***	0 025
Dieldrin	60-57-1	0 050 U	0 050	0 050 U	0 050	0 50 U	0 50	NS		0 050 U	0 050	0 050 U	0 050
Endosulfan I	959-98-8	0 025 U	0 025	0 025 U	0 025	0 25 U	0 25	NS		0 025 U	0 025	0 025 U	0 025
Endosulfan sulfate	1031-07-8	0 050 U	0 050	***0.10***	0 050	***0.88*** ***J***	0 50	NS		0 050 U	0 050	***0.10***	0 050
gamma-Chlordane	5103-74-2	0 029 U	0 029	***0.10***	0 029	0 29 U	0 29	NS		0 029 U	0 029	***0.087***	0 029
Heptachlor epoxide	1024-57-3	0 025 U	0 025	0 025 U	0 025	0 25 U	0 25	NS		0 025 U	0 025	0 025 U	0 025
Chlorinated Herbicides (USEPA Method 8151A)													
Date Prepared		3/14/2014		3/14/2014		3/14/2014		NS		3/14/2014		3/13/2014	
Date Analyzed		3/18/2014		3/18/2014		3/18/2014		NS		3/18/2014		3/18/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Dichlorprop	120-36-5	0 15 U	0 15	0 17 U	0 17	0 16 U	0 16	NS		0 16 U	0 16	0 16 U	0 16
Total Organic Carbon (USEPA Method 9060/SM 5310C)													
Date Analyzed		3/19/2014		3/19/2014		3/19/2014		NS		3/18/2014		3/19/2014	
Analyte	CAS No.	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Organic Carbon (TOC)	7440-44-0	***7.9***	0 50	***26.1***	2 5	***33.6***	2 5	NS		***2.6***	0 50	***4.9***	0 50

Parameters not listed were not detected in any samples
Results in **bold italics** denote detections
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value
JP - Result is an estimated value, The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%
D - Compound analyzed at a dilution
JD - Compound analyzed at a dilution, result is an estimated value

Prepared by: LAB Date: 04/17/2014
Checked by: JSI Date: 05/12/2014
Reviewed by: AWD Date: 05/21/2014

Table 2
Summary of Validated Groundwater Sample Data - Inorganics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Solutia Inc. - Sauget, Illinois

Monitoring Well		BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID		60164660017		60164660016		60164660015		60164660014		60164660013		60164660012	
Date Sampled		3/13/2014		3/13/2014		3/13/2014		3/12/2014		3/12/2014		3/12/2014	
Time Sampled		12 05		10 05		11 52		14 21		10 00		10 25	
Mercury (USEPA Method 7470A)													
Date Prepared		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Date Analyzed		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Mercury	7439-97-6	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0.022
Metals (USEPA Method 6010B)													
Date Prepared		3/17/2014		3/17/2014		3/17/2014		3/17/2014		3/17/2014		3/17/2014	
Date Analyzed		3/24/2014		3/24/2014		3/24/2014		3/24/2014		3/24/2014		3/24/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Arsenic	7440-38-2	***103***	3 4	***4.7 J***	3 4	***5.0 J***	3.4	***4.3 J***	3 4	***4.8 J***	3 4	***6.7 J***	3 4
Barium	7440-39-3	***255***	0 61	***466***	0 61	***397***	0 61	***208***	0 61	***839***	0 61	***1,990***	0 61
Chromium	7440-47-3	***1.9 J***	0 89	***2.2 J***	0 89	***1.6 J***	0 89	***2.4 J***	0 89	***6.3***	0 89	***1.4 J***	0 89
Copper	7440-50-8	0 85 U	0 85	0 85 U	0 85	***0.88 J***	0 85	***1.1 J***	0 85	***1.0 J***	0 85	0 85 U	0 85
Lead	7439-92-1	***3.0 J***	2 2	2 2 U	2 2	2 2 U	2 2	***2.2 J***	2 2	2 2 U	2 2	2 2 U	2 2
Nickel	7440-02-0	***1.8 J***	0 95	***1.4 J***	0 95	***1.1 J***	0 95	***1.2 J***	0 95	***4.8 J***	0 95	***5.6***	0 95
Total Dissolved Solids (USEPA Method 160.1/SM 2540C)													
Date Analyzed		3/18/2014		3/14/2014		3/18/2014		3/18/2014		3/18/2014		3/18/2014	
Analyte	CAS No.	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Dissolved Solids (TDS)	-	***1,540***	5 0	***948***	5 0	***1,040***	5 0	***1,400***	5 0	***937***	5 0	***1,750***	5 0

Parameters not listed were not detected in any samples
Results in **bold italics** denote detections
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value

Prepared by LAB Date 04/17/2014
Checked by JSI Date 05/12/2014
Reviewed by AWD Date 05/21/2014

Table 2
Summary of Validated Groundwater Sample Data - Inorganics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Solutia Inc - Sauget, Illinois

Monitoring Well		BWMW-3S	MDL	BWMW-3M	MDL	BWMW-3D	MDL	BWMW-4S	MDL	BWMW-4M	MDL	BWMW-4D	MDL
Lab Sample ID		60164660007		60164660006		60164660005		NS		60164660003		60164660004	
Date Sampled		3/11/2014		3/11/2014		3/11/2014		NS		3/10/2014		3/10/2014	
Time Sampled		11 56		10 20		12 30		NS		13 20		14 10	
Mercury (USEPA Method 7470A)													
Date Prepared		3/19/2014		3/19/2014		3/19/2014		NS		3/19/2014		3/19/2014	
Date Analyzed		3/19/2014		3/19/2014		3/19/2014		NS		3/19/2014		3/19/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Mercury	7439-97-6	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	NS		0 022 U	0 022	0 022 U	0 022
Metals (USEPA Method 6010B)													
Date Prepared		3/13/2014		3/13/2014		3/13/2014		NS		3/13/2014		3/13/2014	
Date Analyzed		3/14/2014		3/14/2014		3/14/2014		NS		3/14/2014		3/14/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Arsenic	7440-38-2	6 7 U	6 7	3 4 U	3 4	3 4 U	3 4	NS		3 4 U	3 4	3 4 U	3 4
Barium	7440-39-3	***304***	0 61	***740***	0 61	***1,080***	0 61	NS		***417***	0 61	***131***	0 61
Chromium	7440-47-3	0 89 U	0 89	0 89 U	0 89	0 89 U	0 89	NS		0 89 U	0 89	0 89 U	0 89
Copper	7440-50-8	***2.9 J***	0 85	0 85 U	0 85	***0.88 J***	0 85	NS		0 85 U	0 85	0 85 U	0 85
Lead	7439-92-1	2 2 U	2 2	***2.6 J***	2 2	2 2 U	2 2	NS		2 2 U	2 2	2 2 U	2 2
Nickel	7440-02-0	***1.0 J***	0 95	***4.3 J***	0 95	***2.8 J***	0 95	NS		***2.3 J***	0 95	***3.2 J***	0 95
Total Dissolved Solids (USEPA Method 160.1/SM 2540C)													
Date Analyzed		3/18/2014		3/18/2014		3/18/2014		NS		3/14/2014		3/14/2014	
Analyte	CAS No.	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Dissolved Solids (TDS)	-	***1,650***	5 0	***1,310***	5 0	***1,180***	5 0	NS		***748***	5 0	***726***	5 0

Parameters not listed were not detected in any samples.
Results in bold italics denote detections
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value

Prepared by: LAB Date: 04/17/2014
Checked by: JSI Date: 05/12/2014
Reviewed by: AWD Date: 05/21/2014

Table 3
Summary of Validated Groundwater Sample Data - Organics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Solutia Inc. - Sauget, Illinois

Monitoring Well		DUP 1	MDL	DUP 2	MDL	RB 1	MDL	RB 2	MDL	FB 1	MDL	FB 2	MDL	Trip Blank	MDL	Trip Blank	MDL
Lab Sample ID		60164660008		60164660020		60164660018		60164660019		60164660009		60164660021		60164660010		60164660022	
Date Sampled		3/10/2014		3/13/2014		3/12/2014		3/13/2014		3/11/2014		3/13/2014		3/11/2014		3/13/2014	
Time Sampled						14 50		13 40		12 45		10 45					
Volatile Organic Compounds (USEPA Method 8260B)																	
Date Analyzed		3/22/2014		3/26/2014		3/21/2014		3/28/2014		3/20/2014		3/28/2014		3/19/2014		3/28/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1-Dichloroethane	75-34-3	*0 18* J	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050
1,1-Dichloroethene	75-35-4	0 20 U	0 20	0 20 U	0 20	0 20 U	0 20	0 20 U	0 20	*0 45* J	0 20	0 20 U	0 20	1 0 U	0 20	0 20 U	0 20
1,2-Dichloroethane	107-06-2	*0 29* J	0 12	0 12 U	0 12	0 12 U	0 12	0 12 U	0 12	0 12 U	0 12	0 12 U	0 12	0 12 U	0 12	0 12 U	0 12
Acetone	67-64-1	1 9 U	1 9	*2 0* J	1 9	*3 2* J	1 9	*8 7* J	1 9	*2 3* J	1 9	*4 0* J	1 9	1 9 U	1 9	1 9 U	1 9
Benzene	71-43-2	*0 67* J	0 080	*48 6*	0 080	0 080 U	0 080	*0 15* J	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080
Chlorobenzene	108-90-7	*1 31*	0 21	*6,600* D	10 5	*0 78* J	0 21	*38 9*	0 21	0 21 U	0 21	0 21 U	0 21	0 21 U	0 21	0 21 U	0 21
cis-1,2-Dichloroethene	156-59-2	*1 1*	0 080	*0 21* J	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080	0 080 U	0 080
Ethylbenzene	100-41-4	0 18 U	0 18	*0 84* J	0 18	0 18 U	0 18	0 18 U	0 18	0 18 U	0 18	0 18 U	0 18	0 18 U	0 18	0 18 U	0 18
Toluene	108-88-3	*0 18* J	0 17	*0 26* J	0 17	*0 18* J	0 17	*0 32* J	0 17	1 0 U	0 17	*0 31* J	0 17	0 17 U	0 17	0 17 U	0 17
Trichloroethene	79-01-6	0 17 U	0 17	1 0 U	0 17	*0 29* J	0 17	1 0 U	0 17	*0 44* J	0 17	1 0 U	0 17	0 17 U	0 17	1 0 U	0 17
Semi-Volatile Organic Compounds (USEPA Method 8270C)																	
Date Prepared		3/17/2014		3/19/2014		3/19/2014		3/19/2014		3/17/2014		3/19/2014					
Date Analyzed		3/28/2014		3/28/2014		3/28/2014		3/28/2014		3/26/2014		3/28/2014					
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)					
1,2-Dichlorobenzene	95-50-1	*3 5* J	0 55	*2 4* J	0 55	0 55 U	0 55	0 55 U	0 55	0 55 U	0 55	0 55 U	0 55				
1,3-Dichlorobenzene	541-73-1	*1 9* J	0 94	0 94 U	0 94	0 94 U	0 94	0 94 U	0 94	0 94 U	0 94	0 94 U	0 94				
1,4-Dichlorobenzene	106-46-7	*16 3*	0 69	*8 1* J	0 69	0 69 U	0 69	0 69 U	0 69	0 69 U	0 69	0 69 U	0 69				
2-Chlorophenol	95-57-8	0 93 U	0 93	*3 7* J	0 93	0 93 U	0 93	0 93 U	0 93	0 93 U	0 93	0 93 U	0 93				
4-Chloroaniline	106-47-8	*34 8*	0 56	*3 1* J	0 56	0 56 U	0 56	0 56 U	0 56	0 56 U	0 56	0 56 U	0 56				
Naphthalene	91-20-3	0 58 U	0 58	*2 0* J	0 58	0 58 U	0 58	0 58 U	0 58	0 58 U	0 58	0 58 U	0 58				
Organochlorine Pesticides (USEPA Method 8081A)																	
Date Prepared		3/14/2014		3/18/2014		3/18/2014		3/18/2014		3/14/2014		3/18/2014					
Date Analyzed		4/1/2014		3/25/2014		3/25/2014		3/25/2014		4/1/2014		3/25/2014					
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)					
4,4'-DDE	72-55-9	*0 068* J	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 050	0 050 U	0 05	0 050 U	0 050				
delta-BHC	319-86-8	*0 048* J	0 025	0 025 U	0 025	0 025 U	0 025	0 025 U	0 025	*0 048* J	0 048	0 025 U	0 025				
Chlorinated Herbicides (USEPA Method 8151A)																	
Date Prepared		3/14/2014		3/19/2014		3/19/2014		3/19/2014		3/14/2014		3/18/2014					
Date Analyzed		3/18/2014		3/22/2014		3/22/2014		3/22/2014		3/18/2014		3/22/2014					
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)					
Total Organic Carbon (USEPA Method 9060/SM 5310C)																	
Date Analyzed		3/19/2014		3/19/2014		4/2/2014		4/2/2014		3/19/2014		4/2/2014					
Analyte	CAS No	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)					
Total Organic Carbon (TOC)	7440-44-0	*2 0*	0 50	*4 8*	0 50	*0 72* J	0 50	*0 56* J	0 50	0 50 U	0 50	*0 54* J	0 50				

Parameters not listed were not detected in any samples.
Results in bold italics denote detections.
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value
D - Compound analyzed at a dilution

Prepared by LAB Date 04/17/2014
Checked by JSI Date 05/12/2014
Reviewed by AWD Date 05/21/2014

Table 4
Summary of Validated Groundwater Sample Data - Inorganics (March 2014 Sampling Event)
Site R Quarterly Groundwater Monitoring
Solutia Inc - Sauget, Illinois

Monitoring Well		DUP 1	MDL	DUP 2	MDL	RB 1	MDL	RB 2	MDL	FB 1	MDL	FB 2	MDL
Lab Sample ID		60164660008		60164660020		60164660018		60164660019		60164660009		60164660021	
Date Sampled		3/10/2014		3/13/2014		3/12/2014		3/13/2014		3/11/2014		3/13/2014	
Time Sampled						14 50		13 40		12 45		10 45	
Mercury (USEPA Method 7470A)													
Date Prepared		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Date Analyzed		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014		3/19/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Mercury	7439-97-6	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022	0 022 U	0 022
Metals (USEPA Method 6010B)													
Date Prepared		3/13/2014		3/17/2014		3/17/2014		3/17/2014		3/13/2014		3/17/2014	
Date Analyzed		3/14/2014		3/24/2014		3/24/2014		3/24/2014		3/14/2014		3/24/2014	
Analyte	CAS No.	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Arsenic	7440-38-2	3 4 U	3 4	*4.1 J*	3 4	3 4 U	3 4	3 4 U	3 4	3 4 U	3 4	3 4 U	3 4
Barium	7440-39-3	*414*	0 61	*404*	0 61	0 61 U	0 61	0 61 U	0 61	0 61 U	0 61	0 61 U	0 61
Chromium	7440-47-3	0 89 U	0 89	*1.8 J*	0 89	0 89 U	0 89	0 89 U	0 89	0 89 U	0 89	0 89 U	0 89
Nickel	7440-02-0	*1.9 J*	0 95	*1.3 J*	0 95	0 95 U	0 95	0 95 U	0 95	0 95 U	0 95	0 95 U	0 95
Total Dissolved Solids (USEPA Method 160.1/SM 2540C)													
Date Analyzed		3/14/2014		3/20/2014		3/18/2014		3/18/2014		3/18/2014		3/20/2014	
Analyte	CAS No.	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Dissolved Solids (TDS)	-	*742*	5 0	*1070*	5 0	5 0 U	5 0	5 0 U	5 0	5 0 U	5 0	5 0 U	5 0

Parameters not listed were not detected in any samples
Results in bold italics denote detections
MDL - Method Detection Limit
NS - Not Sampled
Flags and Qualifiers
U - Analyte was not detected at or above the Method Detection Limit (MDL)
J - Result is an estimated value

Prepared by LAB Date 04/17/2014
Checked by JSI Date 05/12/2014
Reviewed by AWD Date 05/21/2014

APPENDIX B

DATA VALIDATION REPORT

1.0 INTRODUCTION

Golder Associates Inc. (Golder) validated the analytical data for the groundwater samples collected from March 10, 2014 through March 13, 2014 at Solutia Site R in Sauget, Illinois (Site) Samples were collected from a total of eleven (11) of the twelve (12) on-site groundwater monitoring wells. Field duplicate samples were collected from wells BWMW-4M and BWMW-1D Two equipment rinsate blanks, two field blanks, and two trip blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1 The samples were submitted to Pace Analytical Services, Inc. (Pace Analytical) of Florissant, Missouri which shipped the samples to be analyzed for volatile organic compounds, semi-volatile organic compounds, total metals, chlorinated pesticides, and general chemistry parameters that night to Lenexa, Kansas via courier. The samples to be analyzed for chlorinated herbicides were shipped for next day delivery to the TestAmerica Savannah, Georgia facility by the Pace Analytical Service Center in Florissant, Missouri The samples were placed into one sample delivery group (SDG) by the laboratory. The SDG is 60164660

The samples were collected and analyzed in accordance with the Field Sampling Plan for the Groundwater Migration Control System, Sauget Area 2 Superfund Site (FSP; URS, January 2003). Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), chlorinated pesticides, chlorinated herbicides, total metals, and general chemistry parameters. The general chemistry parameters were total organic carbon (TOC) and total dissolved solids (TDS). Analytical methods used are from U.S. Environmental Protection Agency (USEPA) document SW-846, Test Methods for Evaluating Solid Waste, Revision 6 contained in Final Update III August 2002 and listed below:

- VOCs were analyzed using Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
- SVOCs were analyzed by Method 8270C Semi-volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
- Chlorinated Pesticides were analyzed using Method 8081A Organochlorine Pesticides by Gas Chromatography
- Chlorinated Herbicides were analyzed using Method 8151A Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation Derivatization
- Total metals were analyzed in accordance with Method 6010B Inductively Coupled Plasma-Atomic Emission Spectrometry except for mercury, which was analyzed by Method 7470A, Mercury in Liquid Waste (Manual Cold Vapor Technique)
- The general chemistry parameters were analyzed using standard SW-846 methodologies and EPA methodologies contained in Methods for Chemical Analysis of Water and Wastes, March 1983

Data validation was performed following the general guidelines of Section 9 2 of the Quality Assurance Project Plan for the Groundwater Migration Control System, Sauget Area 2 Superfund Site (QAPP, URS, January 2003). The QAPP specifies that the most recent versions of the national data validation guidelines be used for data review. The following guidelines were generally used·

- USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540-R-08-01, June 2008

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, June 2008

These documents are hereafter referred to as the "functional guidelines" If there was a conflict between the functional guidelines and the quality control criteria specified in the analytical method, the method-specific criteria were used. SDG (60164660) was prepared as a Level 4 data report package containing quality control information and raw data.

Data qualifiers are defined in Table 2 Where quality control criteria were met, positive results were not qualified and non-detected results were qualified "U" signifying that the result is below the quantitation limit (organics) or detection limit (inorganics) Where more than one qualifier for a sample result was warranted, the most general qualifier was applied to the results

Sections 2 through 7 summarize the specific instances where quality control criteria in the functional guidelines were not met. Tables 3 through 8 list the specific samples for which qualification occurred. As specified in the functional guidelines, if the non-adherence to quality control criteria is slight, professional judgment was used in qualification of the data. However, if the non-adherence is significant, qualification and rejection of the data may be necessary

Following data validation, the qualified data were summarized in tables, which are included in the main body of the report.

2.0 VOLATILE ORGANIC COMPOUNDS

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for VOCs. Field duplicate samples were collected from wells BWMW-4M and BWMW-1D. Two equipment rinsate blanks, two field blanks, and two trip blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc., were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 Method 8260B. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below

2.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met.

Accuracy: Goals for accuracy were met.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target/non-target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Nineteen (19) samples were reviewed in this data set. A total of 646 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%.

2.2 Major Concerns

There were no major concerns that required rejection of data.

2.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 3 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

When a compound was detected in a blank (i.e method, field, rinsate) the five times (ten times for common lab contaminants) rule was applied to affected samples. Results greater than the method detection limit and below five or ten times the blank detection were qualified as non-detects (U)

The sample results must agree within 50% RPD of each other, positive results were qualified as estimated values (J) and non-detected results were qualified with estimated reporting limits (UJ).

When a sample was analyzed at a dilution, positive affected results were qualified (D/DJ).

3.0 SEMI-VOLATILE ORGANIC COMPOUNDS

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for SVOCs Field duplicate samples were collected from wells BWMW-4M and BWMW-1D Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services Inc., were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 Method 8270C. Samples were validated in general accordance with the functional guidelines Results of the validation are summarized below.

3.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met, except where noted below.

Accuracy: Goals for accuracy were met, except where noted below.

Sample Result Verification: Sample results were supported in the raw data

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target analytes or matrix interference.

Completeness. The data packages were complete for requested analyses. Seventeen (17) samples were reviewed in this data set. A total of 1,088 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%

3.2 Major Concerns

There were no major concerns that required rejection of data

3.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 4 for the specific samples affected by each concern

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

If there were two or more surrogate compounds diluted out of a sample, positive affected results were qualified (J).

When a sample was analyzed at a dilution, positive affected results were qualified (D/JD)

4.0 CHLORINATED PESTICIDES

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for chlorinated pesticides. Field duplicate samples were collected from wells BWMW-4M and BWMW-1D. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc., were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 Method 8081. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below

4.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met, except where noted below.

Accuracy. Goals for accuracy were met, except where noted below

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of non-target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Seventeen (17) samples were reviewed in this data set. A total of 357 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%.

4.2 Major Concerns

There were no major concerns that required rejection of data.

4.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 5 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

If the difference between the values of the GC columns was greater than 40% and the lower value was reported then positive affected results were qualified (P/JP).

5.0 CHLORINATED HERBICIDES

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for chlorinated herbicides Field duplicate samples were collected from wells BWMW-4M and BWMW-1D. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc. who then shipped the samples to the Savannah, Georgia TestAmerica facility Samples were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 Method 8151. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

5.1 Data Quality Objectives

Precision. Goals for laboratory and field precision were met

Accuracy: Goals for accuracy were met, except where noted below.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Seventeen (17) samples were reviewed in this data set. A total of 153 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%

5.2 Major Concerns

There were no major concerns with the sample analyses to warrant rejection of data.

5.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 6 for the specific samples affected by each concern

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

6.0 INORGANICS

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for inorganics. Field duplicate samples were collected from wells BWMW-4M and BWMW-1D Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Service, Inc , were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 methods 6010 and 7470. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

6.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met, except where noted below

Accuracy Goals for accuracy were met, except where noted below

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits. The detection limit goals were achieved for analyses, except where detections were found in calibration blanks

Completeness. The data packages were complete for requested analyses Seventeen (17) samples were reviewed in this data set A total of 170 groundwater results were reported of which all were deemed valid This results in a laboratory completeness of 100%; with an overall completeness of 100%

6.2 Major Concerns

There were no major concerns that required rejection of data.

6.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 7 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

The relative percent difference (RPD) between duplicates and their associated samples be within 50%. Positive affected results were qualified with estimated values (J).

7.0 GENERAL CHEMISTRY

Samples were collected from eleven (11) groundwater monitoring locations and analyzed for TOC and TDS. Field duplicate samples were collected from wells BWMW-4M and BWMW-1D. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1 The samples were submitted to Pace Analytical Service, Inc., were placed into one data package or SDG (60164660), and were prepared and analyzed using SW-846 Method 5310C and 2540C. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below

7.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met

Accuracy: Goals for accuracy were met

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits. The detection limit goals were achieved for analyses.

Completeness: The data packages were complete for requested analyses. Seventeen (17) samples were reviewed in this data set. A total of 34 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%.

7.2 Major Concerns

There were no major quality control concerns identified that required rejection of data.

7.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data Refer to Table 8 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J)

8.0 SUMMARY

Golder validated the data collected during the March 2014 sampling event from Solutia Sauget Site R in general accordance with USEPA functional guidelines Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Where a positive result was qualified as estimated, the analyte should be considered present Similarly, a result that was qualified as an estimated reporting limit should be considered not present for the purposes of this program, although the limit itself may not be precise. The completeness for the entire data set was 100%

TABLE 1

SAMPLE POINT IDENTIFICATIONS AND SDG NUMBERS
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

SAMPLE POINT I.D.	DATE SAMPLED	VOLATILE ORGANICS	SEMIVOLATILE ORGANICS	PESTICIDES	HERBICIDES	TOTAL INORGANICS	GENERAL CHEMISTRY
Groundwater Samples							
BWMW-1S	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-1M	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-1D	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-2S	3/12/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-2M	3/12/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-2D	3/12/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-3S	3/11/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-3M	3/11/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-3D	3/11/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-4S	NS	NS	NS	NS	NS	NS	NS
BWMW-4M	3/10/2014	60164660	60164660	60164660	60164660	60164660	60164660
BWMW-4D	3/10/2014	60164660	60164660	60164660	60164660	60164660	60164660
Field Duplicates							
DUP-1	3/10/2014	60164660	60164660	60164660	60164660	60164660	60164660
DUP-2	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
Field Blanks							
FIELD BLANK 1	3/11/2014	60164660	60164660	60164660	60164660	60164660	60164660
FIELD BLANK 2	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
Trip Blanks							
TRIP BLANK	3/11/2014	60164660	60164660	60164660	60164660	60164660	60164660
TRIP BLANK	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660
Rinsate Blanks							
RINSATE BLANK-1	3/12/2014	60164660	60164660	60164660	60164660	60164660	60164660
RINSATE BLANK-2	3/13/2014	60164660	60164660	60164660	60164660	60164660	60164660

Notes:

1. General Chemistry included total organic carbon (TOC) and total dissolved solids (TDS).
2. MS/MSD performed on sample BWMW-2M.
3. NS - Not sampled due to well being dry.

Checked by: LAB 4/28/2014
Reviewed by: AWD 5/21/2014

TABLE 2

VALIDATION QUALIFIER DEFINITIONS
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

Organics

U - The analyte was analyzed for but not detected.
J - The analyte was detected and the result is considered an estimated value.
D - The analyte was detected at a dilution.
JD - Compound analyzed at a dilution; result is considered an estimated value.
JP - The difference between the values of the GC columns was greater than 40% and the lower value is reported. The result is considered an estimated value.
P - The difference between the values of the GC columns was greater than 40% and the lower value is reported.

Inorganics

U - The analyte was analyzed for but not detected.
considered an estimated value.
J - The analyte was detected and the result is considered an estimated value.

Checked by: LAB 4/28/2014
Reviewed by: AWD 5/21/2014

TABLE 3

VOLATILE ORGANIC COMPOUNDS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: VOC
SAMPLE DELIVERY GROUP NUMBERS: 60164660
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Acetone, Benzene, Chlorobenzene, Ethylbenzene, 1,1-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroehane, 2-Butanone, Chloromethane, cis-1-2-Dichloroethene, Trichloroethene, Toluene, and Vinyl chloride	J	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3M, BWMW-3D, BWMW-4M, BWMW-4D, FB-1, FB-2, RB-1, RB-2, DUP-1, and DUP-2
Detection in a blank (5X rule)	Carbon disulfide, 1,1-Dichloroethene, Toluene and Trichloroethene	U	BWMW-3S, FB-1, FB-2, RB-2, DUP-2, TRIP BLANK (3/11/2014), and TRIP BLANK (3/13/2014)
The RPD between the duplicate and associated sample is greater than 50%	Acetone and Toluene	J	BWMW-1D, BWMW-4M, DUP-1, and DUP-2
Compounds analyzed at a dilution	Chlorobenzene	D/JD	DUP-2

Checked by LAB 4/28/2014
Reviewed by AWD 5/21/2014

TABLE 4

SEMI-VOLATILE ORGANIC COMPOUNDS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: SVOC
SAMPLE DELIVERY GROUP NUMBERS: 60164660
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	4-Chloroaniline, 2-Chlorophenol, 2,4-Dimethylphenol, 2-Methylnaphthalene, 2-Methylphenol, 3&4 Methylphenol, Naphthalene, 1,4-Dichlorobenzene, 1,3-Dichlorobenzene, and 1,2-Dichlorobenzene	J	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4M, DUP-1, and DUP-2
Two or more surrogates diluted out of sample	4-Chloroaniline	J	BWMW-2D
Compounds analyzed at a dilution	4-Chloroaniline and 1,2-Dichlorobenzene	D/JD	BWMW-1M, BWMW-2M, BWMW-2D, BWMW-3M, BWMW-3D, and BWMW-4D

Checked by LAB 4/28/2014
Reviewed by AWD 5/21/2014

TABLE 5

CHLORINATED PESTICIDES DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: Chlorinated Pesticides
SAMPLE DELIVERY GROUP NUMBERS: 60164660
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	4-4'-DDE, delta BHC, Endosulfan sulfate, Gamma-chlordane, and Hetachlor epoxide	J	BWMW-1M, BWMW-2D, BWMW-3M, BWMW-3D, BWMW-4M, BWMW-4D, FB-1, and DUP-1
The difference between the values of the GC columns was greater than 40% and lower value was reported	4-4'-DDT, Endosulfan sulfate, Heptachlor epoxide, and gamma-Chlordane	P/JP	BWMW-1M, BWMW-2M and BWMW-2D

Checked by LAB 4/28/2014
Reviewed by AWD 5/21/2014

TABLE 6

CHLORINATED HERBICIDES DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: Chlorinated Herbicides
SAMPLE DELIVERY GROUP NUMBERS: 60164660
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Dichlorprop	J	BWMW-2S

Checked by LAB 4/28/2014
Reviewed by AWD 5/21/2014

TABLE 7

METALS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: Metals
SAMPLE DELIVERY GROUP NUMBERS: 60164860
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Arsenic, Chromium, Copper, Lead, and Nickel	J	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4M, BWMW-4D, DUP-1, and DUP-2
RPD between the duplicate and associated sample is greater than 50%	Nickel	J	BWMW-4M and DUP-1

Checked by LAB 4/28/2014
Reviewed by AWD 5/21/2014

TABLE 8

GENERAL CHEMISTRY DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
MARCH 2014 GROUNDWATER SAMPLING EVENT

DATE: MARCH 2014 **Project No. : 063-9678**
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: TDS and TOC
SAMPLE DELIVERY GROUP NUMBERS: 60164660
REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	TOC	J	RB-1

Checked by: LAB 4/28/2014
Reviewed by. AWD 5/21/2014